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Canada

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Earth Observation Express

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May 17, 2011 – no 49

1. Request for Proposals on Advanced Earth Observation Water Resources Sector Applications

The objectives of the Earth Observation Applications and Utilizations (EOAU) Division of the Canadian Space Agency (CSA) include optimizing the use of RADARSAT 2 data. Through its Earth Observation Applications Development Program (EOADP), the CSA is requesting proposals on advanced Earth Observation (EO) water resources sector applications. The goal of this request for proposals (RFP) is to develop advanced methods, systems, products and/or services, to maximize the utilization of the RADARSAT-2 data allocation and other appropriate EO imagery within the water sector user community. Focus will be on Government of Canada user requirements within this sector, on developing EO solutions to environmental issues within Canada, and to foster increased use of RADARSAT-2 data within a multi-sensor approach. Under this Request for Proposals, the prime contractor must be a Canadian supplier legally registered or incorporated in Canada. The bidder must involve a Canadian Federal Government water sector organization that has an interest or a potential interest in the use of EO data. Closing date: June 10th, 2011. For more information: Merx.com.

2. Earth Observation Ecosystem Services Initiative

Canadians require the assurance that the ecosystems of Canada are being managed sustainably, are healthy and can continue to provide products and services. These include products like water, forest products and food; services like the regulation of floods, drought and disease; ecosystem support processes like the formation of soils, nutrient cycling, decomposition of organic matter; and cultural services like recreational, spiritual, religious and other non-material benefits. To be effective, ecosystem management must be long-term and at large-scales. Satellite-based Earth Observation (EO) has the potential to monitor ecosystems features and functions primarily due to the inherent capacity to record data across large areas at frequent intervals, ranging from minutes to weeks. The Earth Observation Ecosystem Services Initiative (EOESI) will be a well-coordinated applied research and development initiative that will improve the effective use of EO satellite information and tools in conjunction with other conventional land information. It will aim to create stronger relationships among researchers, technical experts, planners, managers and decision makers, and in so doing, increase the capacity of Canada`s land and

resource management systems to mobilize and apply the best available information and knowledge. The EOESI will be guided by a small coordinating committee made up of key information providers and users. The committee will help to align user requirements, improve data use efficiencies, increase capacity, ensure interoperability, expand human capital, guide proof of concept of multiple applications and increase overall organizational effectiveness with respect to the use of EOES-related information to inform policy and planning across Canada. Ecosystem monitoring is one of the three main uses of the future RADARSAT Constellation mission, with disaster management and maritime surveillance. The initiative is driven by the Canadian Space Agency Earth Observation Applications and Utilizations (EOAU) Division and Environment Canada. For more information, please visit eoesi.com and contact yves.crevier@asc-csa.gc.ca.

3. Reducing Loss of Life and Property from Natural Disasters: Coastal Decision Support During the Caribbean Hurricane Season with RADARSAT-2

The Caribbean Satellite Disaster Pilot (CSDP) is a regional project under GEO Task DI-09-02B. It was established in close cooperation with the Committee on Earth Observation Satellites (CEOS) and regional institutions such as the Caribbean Disaster and Emergency Management Agency (CDEMA), the Caribbean Institute for Meteorology and Hydrology and the University of the West Indies (UWI). The Canadian Space Agency (CSA) leads the end-to-end regional demonstrations on behalf of CEOS, and the CSA has been active in a number of CSDP projects in close collaboration with NASA, including playing a lead role with Grenada for CSDP No. 2. The goal of CSDP No. 2 is to enhance EO capacity of authorities in Barbados, British Virgin Islands, Grenada, Jamaica and St. Lucia that are engaged in coastal disaster management and emergency response. This IEEE/GEO article outlines on-going activities involving Canadian RADARSAT-2 as well as other EO satellite data acquisitions to-date over selected Caribbean sites, and highlights some image maps and information products that were produced as part of several trials during the 2010 hurricane season by CSA and the Canadian EO industry. For more information, please contact guy.seguin@asc-csa.gc.ca (CEOS, SBA Disaster Lead) and guy.aube@asc-csa.gc.ca (CSDP No. 2 Lead) and visit www.earthzine.org/2010/12/28/from-preparation-to-response-coastal-decision-support-during-the-caribbean-hurricane-season-2010-with-radarsat-2/.

4. Human health: Evaluating the risks of microbial contamination of our recreational waters

The contamination of water in our lakes and rivers by microbial pathogens from the agri-environment is an emerging public health issue in Canada, particularly in the context of climate change, where more and more people are expected to use these water bodies for swimming and other recreational activities. Under the Canadian Space Agency (CSA) Government Related Initiatives Program (GRIP), the Public Health Agency of Canada (PHAC) is conducting a study to improve evaluation and monitoring of the risks of microbial contamination of recreational waters in Canada using satellite imagery. The pilot project, which covers selected public beaches in southern Quebec, focuses on evaluating the usefulness of satellite images in identifying and describing the agri-environmental characteristics associated with fecal contamination of beaches, with the ultimate goal of deploying more precise and effective health monitoring efforts over a larger area. By identifying and gaining a better understanding of these territorial characteristics, public authorities will be able to supplement

existing monitoring programs based on water quality indicators and better target beaches at highest risk. This project is being conducted in partnership with the PHAC Population and Environment division, the University of Montreal's eidemiology of zoonoses and public health research unit (GREZOSP), the Institut national de santé publique du Québec, the University of Sherbrooke's Centre d'applications et recherches en télédétection and the Canada Centre for Remote Sensing. For more information, contact guy.aube@asc-csa.gc.ca or stephanie_brazeau@phac-aspc.gc.ca.

5. Gauging the Health of Canada's Forests from Space

Insect defoliators and extreme climate events such as drought causing dieback are important natural disturbance agents on Canada's forests. These disturbances impact forest productivity and carbon stocks which alter forest health. Information about forest disturbances is necessary for production of State of Forest Reports and monitoring of Criteria and Indicators of Sustainable Forest Management. With the support of the Canadian Space Agency's (CSA) Government Related Initiatives Program (GRIP), Natural Resources Canada, through the Canadian Forest Service and the Canada Centre for Remote Sensing, have been working on a joint project entitled "Gauging the Health of Canada's Forests: Accounting for Insect Defoliation and Dieback in the Indicators of Sustainability for Canadians". The project goal has evolved towards advancing our knowledge about the state of Canada's forests through Earth Observation (EO) data and its synergy with land cover information. This goal encompasses development of a National Defoliation Area Composite (NDAC) mapping and reporting system that integrates medium and fine resolution satellite remote sensing with provincial aerial survey data. For more information, please contact paul.briand@asc-csa.gc.ca, Ron.Hall@nrcan.gc.ca or Sylvia.Thomas@nrcan.gc.ca.

6. Cryosphere: New Arctic Ice Applications and Products

The CryoSat-2 Earth Observation (EO) ice mission was launched a year ago today to monitor the changes in the thickness of marine ice in the polar oceans and in the vast ice sheets that blanket Greenland and Antarctica. To guarantee CryoSat-2 is delivering the best data possible, scientists have set out on a major expedition to the Arctic – part of a collaborative effort between space agencies to gather ice measurements as the satellite orbits above. Orbiting closer to the poles than any other satellite and carrying the first radar altimeter of its kind, CryoSat-2 is providing scientists with the data they need to gain a deeper understanding of the relationship between ice and climate change. Thanks to the support of the Canadian Space Agency (CSA) Government Related Initiatives Program (GRIP), a team of scientist from the Geological Survey of Canada is now participated to the validation and development of CryoSat-2 applications products in the Canadian Arctic. For more information, please visit www.esa.int/esaEO/SEM2N1ASJMG_index_0.html, www.esa.int/esaEO/SEMFHY4SZLG_index_0.html, blogs.esa.int/cryosat-ice-blog/ and contact David.Burgess@NRCan-RNCan.gc.ca, Mike.Demuth@NRCan-RNCan.gc.ca and Guy.Aube@asc-csa.gc.ca.

7. Landslides: Successful Estimation of 3-Dimensional Surface Movement with RADARSAT-2

For the first time, TRE Canada has used SqueeSAR™ results to measure true vertical, East-West and North-South components of surface movement from Radarsat satellite imagery. TRE Canada has completed a research contract

through the Canadian Space Agency (CSA) Earth Observation Application Development Program (EOADP) entitled "Measurement of Horizontal and Vertical Motion using PSInSAR™". Multiple sets of ascending and descending RADARSAT-2 imagery were acquired over two active landslide sites; the Thompson Canyon in BC, Canada and the Portuguese Bend landslide in California. Due to the advanced capabilities of the SqueeSAR™ technique, a high spatial density of measurement points in a non urban setting were identified at both landslide sites and the data decomposed into true vectors of surface movement. For more information, please contact Adrian Bohane at Adrian.bohane@trecanada.com.

8. Earth's Gravity Revealed in Unprecedented Detail From Earth Observation

The geoid is the surface of an ideal global ocean in the absence of tides and currents, shaped only by gravity. It is a crucial reference for measuring ocean circulation, sea-level change and ice dynamics – all affected by climate change. A better knowledge of Earth's gravity field and its associated geoid will significantly advance our understanding of how the Earth system works. An accurate model of the geoid will advance our understanding global ocean circulation patterns and sea-level rise. In addition, a better understanding of variations in the gravity field will lead to a deeper understanding of Earth's interior, such as the physics and dynamics associated with volcanic activity and earthquakes. After just two years in orbit, the GOCE Earth Observation satellite has gathered enough data to map Earth's gravity with unrivalled precision. Scientists now have access to the most accurate model of the 'geoid' ever produced to further our understanding of how Earth works. The colours in the image represent deviations in height (−100 m to +100 m) from an ideal geoid. The blue colours represent low values and the reds/yellows represent high values. To view the animation: download.esa.int/mpeg/Goce-Color_HD1-H264.mp4.

9. Advanced SAR Workshop

The Advanced SAR Workshop is organized bi-annually by the Canadian Space Agency (CSA) to review progress on synthetic aperture radar (SAR) technology. There are usually 200 participants to the workshop with close to 100 speakers. Participants include community leaders, developers, and end-users in both the private and public sectors. The Advanced SAR Workshop 2011 will be held on June 7th, 8th and 9th at the CSA in Saint-Hubert (Quebec, Canada). For more information or to register to the workshop, please visit www.asc-csa.gc.ca/eng/events/2011/asar.asp and contact asar2011@asc-csa.gc.ca.

10. Monitoring a Changing World: 32nd Canadian Symposium on Remote Sensing

The Department of Applied Geomatics of the Université de Sherbrooke will host the 32nd Canadian Symposium on remote sensing. This event is held with the 14th congress of l'Association québécoise de télédétection. The conference will focus on the comprehension of the tools and methods related to remote sensing in all the fields where Earth observation is useful. The Conference provides an opportunity to share scientific and technological advances or to see first-hand the latest progress in remote sensing. This event is held at Bishop's University campus from June 13th to 16th 2011. To register and to obtain more information: pages.usherbrooke.ca/sct-aqt2011/home.php.

11. Expending Our Knowledge of the World: International Geoscience and Remote Sensing Symposium

The venue and dates of IGARSS 2011 have changed from Sendai, Japan, to the Vancouver Convention Centre in British Columbia, Canada, July 24-29th. The website has been updated and a new Exhibitor Prospectus has been prepared. The Canadian Space Agency will participate to this event. For more information: www.igarss11.org/.

Date Modified: 2011-05-17